NaSPA technical SUPPORT
Supporting Enterprise Networks and Operating Environments

FEBRUARY 1995
Volume 3, Number 2

A Place for Everything: Storage Options for the '90s

Choosing the Best Solution for the LAN Storage Crunch

FROM THE EDITOR

Dear NaSPA member;

Through membership research, renewal forms and reader surveys, NaSPA has learned the majority of members are involved with a myriad of computing technologies — from host-based to network-oriented. To manage this disparity, you need a comprehensive publication that discusses the topics of importance in the enterprise-wide environment; one that presents first-hand information from experienced authors.

We have merged ***PC Systems & Support*** magazine with ***Technical Support*** magazine to form the most comprehensive "how-to" publication in the industry. Each month, the new ***Technical Support*** will deliver editorial focused on mainframe, client/server and network-oriented topics.

In addition to ***Technical Support's*** expanded selection of articles and columns, we've made some subtle changes to the look of the magazine. We know you're busy, so we've expanded our table of contents to include a brief description of each article to help you select the articles you need to read to stay abreast of the computing environment.

This new and improved format is dedicated to all of you who are responsible for recommending, purchasing, installing and supporting a multitude of computing configurations.

More Information on More Topics

This month's issue contains a wide variety of topics and presents "how-to" information on many evolving topics. In his article, "A Place for Everything: Storage Options for the '90s," Robert Weiner examines storage options with a concentration on hierarchical storage management. According to Weiner, in evaluating storage options, speed and cost are major consideration factors; thus the challenge becomes balancing the need for highly-efficient storage with cost-effective storage.

Israel Gotay takes you on a step-by-step journey into the world of data transport in his article, "Mainframe-to-Unix Bulk Data Transfer."

Doug Antaya's article, "Welcome to Wide Area Networking," examines the basics of wide area networking services from the perspective of availability, pricing, speed, etc. As the demand for access to corporate information increases, it's essential that MIS professionals learn what wide area networking is all about.

Future issues of ***Technical Support*** will focus on:

- communications solutions;
- LAN-to-mainframe connectivity;
- open systems;
- client/server systems management;
- enterprise-wide printing solutions;
- cross-platform development;
- and many other enterprise-wide topics.

We hope you enjoy the expanded editorial content and columns in ***Technical Support*** !

Sincerely,

Amy B. Birschbach
Editor

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4811 S. 76th St., Suite 210
Milwaukee, WI 53220-4362
(414) 423-2420 FAX: (414) 423-2433
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PUBLISHING

Editor:
Amy B. Birschbach, ext. 123
NaSCOM ID: EDITOR
CompuServe ID: 70373,1513
Internet ID: editor@nascom.com

Assistant Editor:
Matthew Ringlien, ext. 125
NaSCOM ID: EDIT1
Internet ID: edit1@nascom.com

Production Coordinator:
Lisa M. Paulin, ext. 124

Technical Editors:
Eric Allred, Mark Bell, Edward J. Branley, Craig Collins, Danal Estes, Israel E. Gotay, Mark Hanna, Howard Hauck, John E. Johnston, John D. Kinne, David Kreuter, Leo Langevin, Jim McMaster, Dwight S. Miller, Stephen L. Samson, Fred Schuff, Al Shing, Richard B. ViPond, Guy C. Yost

Editorial Assistant:
Debbie Flatow

SALES/MARKETING

Jerry Seefeldt
Marketing/Sales Manager, ext. 110
Display Advertising, Card Decks, Reprints
NaSCOM ID: MARKET
Internet ID: market@nascom.com

Steve Cecil
West Coast Sales
Display Advertising, Card Decks
(415) 595-2856
NaSCOM ID: SALES
Internet ID: sales@nascom.com

Mike Czarnecki
Sales Representative/
List Manager, ext. 105
Mailing List Sales, PC Merchandise Sales
NaSCOM ID: PCSALES
Internet ID: pcsales@nascom.com

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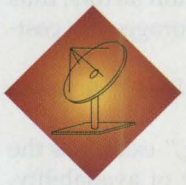

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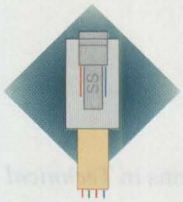

CONNECTIVITY

NaSPA Mission Statement:
The mission of NaSPA, Inc., a not-for-profit organization, shall be to serve as the means to enhance the status and promote the advancement of all corporate computing technical professionals; nurture member's technical and managerial knowledge and skills; improve member's professional careers through the sharing and dispersing of technical information; promote the profession as a whole; further the understanding of the profession and foster understanding and respect for individuals within it; develop and improve educational standards; and assist in the continuing development of ethical standards for practitioners in the industry.

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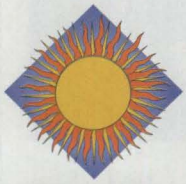


INSIGHTS

STRATEGIES

DEPARTMENTS

COLUMNS

The 16550 UART

BY JOHN E. JOHNSTON

Many corporate IS departments are faced with the prospect of providing remote access to their LANs. There are many options available for remote LAN access, but for any of these options to be accepted by the remote user, it must, above all, be fast — very fast.

No problemo, you say. I'll just get a pair of them new-fangled 28.8 modems and my worries are over. Well things could never be this easy. As modem speeds continue to increase, the bottleneck in remote communications is shifting. When you make one component faster, such as the modem, another component is then overburdened and becomes the new bottleneck.

This is happening with the new 14.4 and 28.8 baud modems. While these modems increase the amount of data that can be transmitted, they are overwhelming the UART chips of most personal computers. This is especially true when the computer is using the OS/2 as we will see.

WHAT IS A UART?

I searched to find out just what UART means, but could not find a reliable answer. The best I can do is to tell you that a UART is the chip that the serial port(s) on a PC uses to communicate with the CPU. There are two types of UARTs used on most of today's computers: the 16540 and the 16550.

The 16540 UART accepts on character from the modem then interrupts the CPU to pass the data along. A CPU interruption in an OS/2 environment is expensive. A good deal of code must be executed to suspend the currently running task, saving its environment, then activating and servicing the interruptee. After the interruptee is finished, more code must be executed to reinstate the interrupted process. Constant CPU interruption can cause severe system degradation in a multitasking environment. Just imagine, a modem that accepts 28,800 bytes per second must interrupt the CPU 28,800 times per second to achieve that speed. Can the CPU and the operating system handle 28,800 interrupts per second? Not likely. The 16550 UART employs hardware buffering which buffers 16 characters of data before interrupting the CPU. The 16550 UART drastically cuts the number of interrupts required of the CPU.

DETERMINE YOUR PC'S UART

This is an interesting issue because there are so many wrong answers floating around out there. Many people will tell you to run the DOS MSD program. I have seen the MSD utility tell me that a 16550 UART was an 8250. MSD was correct, in a manner of speaking. The 16550 UART is a member of the 8250-type device. A 16540 is also an 8250-type device. So MSD is telling me nothing.

Others will tell you to open a DOS box and enter "MODE COMx" where x is the number of the communications port your modem is attached to. They will tell you that if you see "BUFFERED = ON" then you have a 16550. This is true, you will not see BUFFERED=ON unless you have a 16550, but, you may also see BUFFERED=AUTO with both the 16550 and the 16540. So we are still not sure if we have a 16550 UART.

The only sure way I have found to determine a PC's UART is by utilizing the OS/2 SIO shareware program. SIO is a replacement for the OS/2 COM.SYS and VCOM.SYS drivers. One of the nice things about SIO is it will show you at boot time if you have a 16550 UART. SIO that can be downloaded from the OS2BVEN CompuServe forum. The file name is SIO135.ZIP.

You could also ask the manufacturer of the PC about your machine's UART. Unfortunately, you cannot always rely on the manufacturer to pass along the correct information. A colleague of mine recently called the manufacturer of one of my shop's PCs to find out if the model in question had the 16550 UART. He was told, "Definitely not. Model xyz never had the 16550 UART." I was very surprised because SIO had indicated the PC did indeed have the 16550 UART chip.

Unsatisfied, I called the manufacturer and posed the same question. The response I received was a complete turn around, "Yes, model xyz has always carried the 16550 UART."

UPGRADE YOUR 16540 TO A 16550

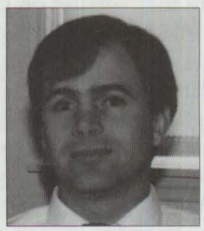
Some PC manufacturers use a socket for the UART chip. If this is the case with your PC, you can simply purchase a 16550 chip for about $10 and pop it into your UART socket. If your PC has the 16540 soldered in (as in most PCs), you must purchase a special card to add the 16550. These cards usually provide two communications ports and possibly one or more parallel ports. An AT-based card costs about $50.

Another option is to purchase an internal modem that has the UART circuitry included. This option is becoming increasingly popular as corporations struggle to provide faster communications using older PCs. The price of these internal modems with the integrated 16550 UART vary widely. Although I have seen 14.4 internal modems with the 16550 circuitry for as little as $125.

DON'T ACT LIKE A $50 MODEM

If you are planning to implement remote access to your computer network, make sure you address the UART issue. It would be very embarrassing trying to explain how a $10 chip in the remote PC is causing a $400 modem to act like a $50 modem. TS

Was this column of value to you? If so, please circle Reader Response Card No. 39.



NaSPA member John E. Johnston is manager of technical support and communications for a major hospital in Pennsylvania. He designs and maintains cross-platform local and wide area networks utilizing NetWare, OS/2, DOS and Windows. John can be reached via NaSCOM ID Johnjohe or CompuServe ID 73473,2146.